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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/634,744	LEMOINE ET AL.
	Examiner	**Art Unit**	
	BRIAN L. ALBERTALLI	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 1, 3, 4, 7, 10, 12, 13, 15, 16, 18, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshioka et al. (U.S. Patent 7,149,682).

In regard to claim 1, Yoshioka et al. disclose an audio intonation calibration method in which an audio signal emitted by a subject (a singer who wants to mimic another singer, column 9, lines 65-66) is reproduced to the auditory organs of said subject after real time processing (the embodiment is used as a karaoke apparatus that allows a user to mimic a particular singer, column 11, lines 9-41; such an application would inherently require the reproduction to occur in real time, so the output signal would remain in tempo with the music), which method is characterized in that is comprises the following steps:

acquisition of a model audio signal to be imitated (a target singer is provisionally

analyzed to produce attribute data, column 10, lines 21-30; in one embodiment, the

target voice is stored and spectral components are extracted in real time, column 23,

lines 2-9);

first spectral analysis of said model audio signal (the spectral shape of the target

singer is stored as attribute data, column 10, lines 21-30; in one embodiment, the target

voice is stored and spectral components are extracted in real time, column 23, lines 2-

9);

acquisition of an imitation audio signal that corresponds to the model audio signal

and has been imitated by the subject (a singer who wants to mimic another singer

provides a voice signal, column 9, line 65 to column 10, line 2);

second spectral analysis of the imitation audio signal (the spectral shape of the

voice signal is extracted, column 10, lines 14-19);

comparison of the spectra of the model audio signal and the imitation audio

signal (corresponding frames of the input voice signal and target signal are taken,

column 10, lines 21-30);

correction of the imitation audio signal as a function of the result of said

comparison (the corresponding frames are combined to correct the mimicking singer's

voice to those of the target signal, column 10, lines 33-42 and column 11, lines 3-5);

wherein at least the spectral analysis step, the comparison step, and the

correction step are carried out in real time and constitute the real time processing

(Yoshika et al. explicitly disclose the spectral analysis step is performed in real time,

column 9, line 65 to column 10, line 2; furthermore, Yoshika et al. disclose the

processing takes place in a karaoke type system, wherein a song sung by a mimicking

singer is adjusted to be more like a target singer and output along a karaoke

accompaniment, column 23, lines 16-20; thus, all the processing steps of Yoshika et al.

would have to inherently be "real-time" processing steps; if the processing was not done

in real-time, the mimicking singer's voice would be out of sync with the karaoke

accompaniment); and

after real time processing, reproduction to the auditory organs of the subject of

the corrected imitation audio signal (the song sung by the mimicking singer is output,

column 10, line 67 to column 11, line 6 and column 23, lines 16-20).

In regard to claim 3, Yoshika et al. disclose the comparison steps and correction

steps are executed over a series of frequency bands in the range of audible frequencies

(both steps are performed on voice signals, column 10, lines 21-30 and column 11, lines

3-5, see also Figs. 5 and 8, thus the processing must inherently occur "in the range of

audible frequencies").

In regard to claim 4, Yoshika et al. disclose the series of frequency bands

corresponds to a subdivision of the range of audible frequencies (see Fig. 5, plurality of

frequencies F0-FN, column 11, line 62 to column 12, line 8).

In regard to claim 7, Yoshika et al. disclose a step of memorizing the spectral analysis of said model audio signal to be imitated (the attributes of a target voice are previously stored, column 10, lines 21-30).

In regard to claim 10, Yoshika et al. disclose the model audio signal to be imitated is a song (a singer to be mimicked, column 9, line 65 to column 10, line 2) and in that said method further includes, simultaneously with the step (E62) of reproducing the corrected audio signal to the auditory organs of the subject (S), a step (E62) of emitting an accompaniment signal of said song to the auditory organs of the subject (S) (the adjusted output of the mimicking singer is output like that of the target singer along with a karaoke accompaniment, i.e. the song, column 23, lines 16-20).

In regard to claim 12, Yoshika et al. disclose a method of performance of a song by a subject (S), in which method an audio signal emitted by a subject (S) is reproduced to the auditory organs of the subject after real time processing, and which method is characterized in that it uses an audio-intonation calibration method according to claim 1 (the adjusted output of the mimicking singer is output like that of the target singer along with a karaoke accompaniment, i.e. the song, column 23, lines 16-20; all the processing steps of Yoshika et al. would have to inherently be "real-time" processing steps; if the processing was not done in real-time, the mimicking singer's voice would be out of sync with the karaoke accompaniment).

In regard to claim 13, Yoshika et al. disclose fixed or removable information storage means, characterized in that said means contain software code portions adapted to execute the steps of an audio-intonation calibration method according to claim 1 (hard disks, CD-ROM's etc., column 42, lines 25-35).

In regard to claim 15, Yoshika et al. disclose fixed or removable information storage means, characterized in that said means contain software code portions adapted to execute the steps of the method according to claim 12 of performing a song (hard disks, CD-ROM's etc., column 42, lines 25-35).

In regard to claim 16, Yoshika et al. disclose during the correction step, each frequency band of the imitation audio signal is corrected so that an intensity value of the imitation audio signal is corrected so that an intensity value of the imitation audio signal is corrected so that an intensity value of the imitation audio signal in the respective band corresponds to an intensity value of the model audio signal in the respective band (Fig. 8(d), a plurality of amplitudes An are each associated with frequency components Fn and each amplitude An is adjusted to match the target data element, column 19, line 60 to column 20, line 35).

In regard to claim 18, Yoshika et al. disclose the first spectral analysis step includes dividing the model audio signal into a multiplicity of frequency bands and determining an intensity of the model audio signal in each of the frequency bands (in

one embodiment, the target voice is stored and spectral components are extracted in

real time, column 23, lines 2-9; the voice signal is applied to an FFT and frequency and

amplitude pairs are extracted, column 11, line 62 to column 12, line 8), wherein the

second spectral analysis step includes dividing the imitation audio signal into same

frequency bands as the first spectral analysis step and determining an intensity of the

imitation audio signal in each of the frequency bands (the input voice is subjected to the

same FFT analysis as the target signal, above, column 11, line 62 to column 12, line 8),

wherein the comparison step includes, for each of the frequency bands, comparing the

intensity of the model audio signal to the intensity of the imitation audio signal, and

wherein the correction step includes correcting the imitation audio signal so that, for

each of the frequency bands, an intensity of the corrected imitation audio signal

corresponds to the intensity of the model audio signal (Fig. 8(d), a plurality of

amplitudes An are each associated with frequency components Fn and each amplitude

An is adjusted to match the target data element, column 19, line 60 to column 20, line

35).

In regard to claim 19, Yoshioka et al. disclose an audio intonation calibration

method in which an audio signal emitted by a subject (a singer who wants to mimic

another singer, column 9, lines 65-66) is reproduced to the auditory organs of said

subject after real time processing (the embodiment is used as a karaoke apparatus that

allows a user to mimic a particular singer, column 11, lines 9-41; such an application

would inherently require the reproduction to occur in real time, so the output signal

would remain in tempo with the music), the method comprising the steps of:

acquiring a model audio signal that is to be imitated by the subject (a target

singer is provisionally analyzed to produce attribute data, column 10, lines 21-30; in one

embodiment, the target voice is stored and spectral components are extracted in real

time, column 23, lines 2-9);

first spectral analysis of said model audio signal (the spectral shape of the target

singer is stored as attribute data, column 10, lines 21-30; in one embodiment, the target

voice is stored and spectral components are extracted in real time, column 23, lines 2-9)

including dividing the model audio signal into a multiplicity of frequency bands and

determining an intensity of the model audio signal in each of the intensity bands (in one

embodiment, the target voice is stored and spectral components are extracted in real

time, column 23, lines 2-9; the voice signal is applied to an FFT and frequency and

amplitude pairs are extracted, column 11, line 62 to column 12, line 8);

emitting, by the subject, an imitation audio signal that corresponds to the model

audio signal (a singer who wants to mimic another singer provides a voice signal,

column 9, line 65 to column 10, line 2);

performing a second spectral analysis of the imitation audio signal (the spectral

shape of the voice signal is extracted, column 10, lines 14-19) including dividing the

imitation audio signal into same frequency bands as in the first spectral analysis step

and determining an intensity of the imitation audio signal in each of the frequency bands

(the input voice is subjected to the same FFT analysis as the target signal, above,

column 11, line 62 to column 12, line 8);

comparing, for each of the frequency bands, the intensity of the model audio

signal to the intensity of the imitation audio signal (corresponding frames of the input

voice signal and target signal are taken, column 10, lines 21-30);

correcting the imitation audio signal as a function of the comparison step so that,

for each of the frequency bands, an intensity of a corrected imitation audio signal

corresponds to the intensity of the model audio signal (Fig. 8(d), a plurality of

amplitudes An are each associated with frequency components Fn and each amplitude

An is adjusted to match the target data element, column 19, line 60 to column 20, line

35);

wherein at least the second spectral analysis step, the comparing step, and the

correcting step are carried out in real time and constitute the real time processing

(Yoshika et al. explicitly disclose the spectral analysis step is performed in real time,

column 9, line 65 to column 10, line 2; furthermore, Yoshika et al. disclose the

processing takes place in a karaoke type system, wherein a song sung by a mimicking

singer is adjusted to be more like a target singer and output along a karaoke

accompaniment, column 23, lines 16-20; thus, all the processing steps of Yoshika et al.

would have to inherently be "real-time" processing steps; if the processing was not done

in real-time, the mimicking singer's voice would be out of sync with the karaoke

accompaniment); and

after real time processing, reproducing to the auditory organs of the subject of

the corrected imitation audio signal (the song sung by the mimicking singer is output,

column 10, line 67 to column 11, line 6 and column 23, lines 16-20).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshika

et al., in view of Gibson et al. (U.S. Patent 6,336,092).

In regard to claim 2, Yoshika et al. do not disclose correction of the dynamic

range of the corrected audio signal.

Gibson et al. disclose a method for converting a source voice signal to a target

voice signal, wherein the method includes:

measurement of the dynamic range of the audio signal imitated by the subject

(the level of a source vocal signal is measured, column 10, line 18);

measurement of the dynamic range of the corrected audio signal (the level of a

corrected source vocal signal to which a spectral envelope has been applied is

measured, column 10, lines 20-21);

comparison of the dynamic range of the imitation audio signal and the corrected

audio signal (the input levels are compared to calculate the final output level, column

10, lines 23-25); and

correction of the dynamic range of the corrected audio signal as a function of the

result of said comparison before reproduction to the auditory organs of the subject of

the corrected audio signal (prior to output, see Fig. 3, the amplitude envelope of the

source vocal signal is applied to the corrected audio signal, column 10, lines 14-45).

It would have been obvious to one of ordinary skill in the art at the time of

invention to modify Yoshika et al. to correct the dynamic range of the corrected signal

as a function of the comparison, because this would make the corrected (transformed)

vocal track the amplitude of the source vocal, as taught by Gibson et al. (column 10,

lines 14-16).

6.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshika

et al., in view of Savic et al. (U.S. Patent 5,327,521).

In regard to claim 5, Yoshika et al. do not provide a specific number of frequency

bands (frequency bands are generically referred to as frequencies F0-FN, see column

11, line 62 to column 12, line 3).

Savic et al. disclose a method for converting a source voice signal to a target

voice signal, wherein the method includes analyzing the range of audible frequencies by

dividing the range of audible frequencies into at least 50 frequency bands (an FFT is

performed with a length N=512, i.e. 512 frequency bands, column 7, lines 19-21).

It would have been obvious to one of ordinary skill in the art at the time of invention to divide the range of audio frequencies into at least 50 bands, because as the number of frequency band increased, the accuracy of the spectral analysis would increase, thus the correction to the target signal's spectral shape would be more accurate.

7.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshika et al., in view of Ojard (U.S. Patent 5,966,687).

In regard to claim 6, Yoshika et al. disclose a karaoke application, but do not disclose displaying text.

Ojard disclose a typical karaoke application wherein the model audio signal to be imitated (i.e. the song to be sung) is a text and disclose displaying the text (column 1, line 26-29).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Yoshika et al. to display the text of the model audio signal to be imitated (i.e. the target voice signal to be mimicked), because this would aid the subject in singing the correct lyrics that would match the target voice signal.

8.   Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshika et al., in view of Jeong (U.S. Patent 5,873,728), in further view of Cave et al. (U.S. Patent 5,362,240).

In regard to claim 8, Yoshika et al. do not disclose emitting the model signal before acquiring the imitation audio signal emitted by the subject.

Jeong discloses a method of practicing a language being studied wherein a model signal to be imitated is emitted to the auditory organs of a subject before the step of acquiring the imitation audio signal emitted by the subject (Fig. 2A, step S2, recording of a model voice signal is output to the user, column 2, lines 46-58; prior to the speaker emulating the reproduced sound, column 3, lines 4-7).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Jeong to emit the model signal prior to acquiring the imitation audio signal, so that the subject would know what was to be imitated.

Furthermore, as to whether one of ordinary skill in the art would combine the audio-intonation calibration technique of Yoshika et al. (which is primarily applied in a karaoke application) to a method of practicing a language being studied, Cave et al. provide ample motivation. Specifically, Cave et al. disclose a method of practicing a language being studied, in with an audio signal is emitted by a subject is reproduced to the auditory organs of the subject after real time processing and modified according to a language being studied (see Abstract).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply the audio intonation calibration technique of claim 1 and disclosed by Yoshika et al. to the field of practicing a language being studied, because people progress more rapidly in learning a language if they can hear their own voice modified

by a process to take the characteristics of the foreign language into account, as taught

by Cave et al. (column 1, lines 12-21).

In regard to claim 9, Yoshika et al. do not disclose emitting the model signal

before acquiring the imitation audio signal emitted by the subject.

Jeong discloses a method of practicing a language being studied wherein a

model signal to be imitated is emitted to the auditory organs of a subject before the step

of acquiring the imitation audio signal emitted by the subject (Fig. 2A, step S2, recording

of a model voice signal is output to the user, column 2, lines 46-58; prior to the speaker

emulating the reproduced sound, column 3, lines 4-7).

Yoshika et al. and Jeong do not disclose modifying the audio signal to be

imitated as a function of parameters representative of the language being studied.

Cave et al. disclose modifying an audio signal as a function of parameters

representative of the language being studied (an audio signal is equalized according to

the language being learned, column 3, lines 26-40).

It would have been obvious to one of ordinary skill in the art at the time of

invention, therefore, to modify the model signal output to the user prior to the step of

acquiring the imitation audio signal emitted by the subject as a function of parameters

representative of the language being studied, because this would emphasize the more

important aspects of the model signal to be imitated by the user, thus helping the user's

pronunciation.

9.   Claims 11, 14, and 17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yoshika et al., in view of Cave et al.

In regard to claim 11, Yoshika et al. disclose an audio signal emitted by a subject

is reproduced to the auditory organs of the subject after real time processing, and which

method is characterized in that it uses an audio intonation calibration method according

to claim 1 (the adjusted output of the mimicking singer is output like that of the target

singer along with a karaoke accompaniment, i.e. the song, column 23, lines 16-20; all

the processing steps of Yoshika et al. would have to inherently be "real-time"

processing steps; if the processing was not done in real-time, the mimicking singer's

voice would be out of sync with the karaoke accompaniment).

Yoshika et al. do not disclose the method is a method of practicing a language

being studied.

Cave et al. disclose a method of practicing a language being studied, in with an

audio signal is emitted by a subject is reproduced to the auditory organs of the subject

after real time processing and modified according to a language being studied (see

Abstract).

It would have been obvious to one of ordinary skill in the art at the time of

invention to apply the audio intonation calibration technique of claim 1 and disclosed by

Yoshika et al. to the field of practicing a language being studied, because people

progress more rapidly in learning a language if they can hear their own voice modified

by a process to take the characteristics of the foreign language into account, as taught

by Cave et al. (column 1, lines 12-21).

In regard to claim 14, Yoshika et al. disclose fixed or removable information storage means, characterized in that said means contain software code portions adapted to execute the steps of an audio-intonation calibration method according to claim 1 (hard disks, CD-ROM's etc., column 42, lines 25-35).

Yoshika et al. do not disclose the method is a method of practicing a language being studied.

Cave et al. disclose a method of practicing a language being studied, in with an audio signal is emitted by a subject is reproduced to the auditory organs of the subject after real time processing and modified according to a language being studied (see Abstract).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply the audio intonation calibration technique of claim 1 and disclosed by Yoshika et al. to the field of practicing a language being studied, because people progress more rapidly in learning a language if they can hear their own voice modified by a process to take the characteristics of the foreign language into account, as taught by Cave et al. (column 1, lines 12-21).

In regard to claim 17, Yoshika et al. do not disclose reproducing the corrected imitation audio signal in headphones on the auditory organs of the subject.

Cave et al. disclose reproducing the corrected imitation audio signal in headphones on the auditory organs of the subject (earphones 25, column 4, lines 27-35).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Yoshika et al. to reproduce the corrected imitation audio signal in headphones on the auditory organs of the subject, because headphones would allow the user to hear their own corrected voice more accurately.

Conclusion

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN L. ALBERTALLI whose telephone number is (571)272-7616. The examiner can normally be reached on Monday-Thursday, 8 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

BLA 10/20/08